



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,037	02/24/2004	Akira Sugiyama	60896 (70551)	3898
21874	7590	03/23/2006	EXAMINER	
EDWARDS & ANGELL, LLP			MOORE, KARLA A	
P.O. BOX 55874			ART UNIT	
BOSTON, MA 02205			PAPER NUMBER	
			1763	
DATE MAILED: 03/23/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/787,037	Applicant(s) SUGIYAMA, AKIRA	
	Examiner Karla Moore	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0204.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP Patent Publication No. 2002-151494A to Yara et al. in view of 5,549,780 to Koinuma et al.

4. Yara et al. disclose a plasma processing apparatus generating plasma under atmospheric pressure for processing object substantially as claimed and comprising: first (Figure 3, 3) and second (Figure 3, 2) electrodes adjacent to each other facing a surface of the object to be processed; a dielectric (4) having a first opposed surface positioned spaced apart from the surface of the object between the object and said first electrode and a second opposing surface positioned between the object and said second electrode, filled between said first and second electrodes and covering said coated surfaces; gas supplying means (7) having a supply opening (5) formed on said first opposing surface for supplying process gas to the surface of the object through said supply opening; and a gas exhausting means (10) formed on said second opposing surface for exhausting process gas to the surface of the object through said exhaust opening.

5. However, Yara et al. fail to disclose the electrodes having coated surfaces.

Art Unit: 1763

6. Koinuma et al. disclose coating the surface of electrodes for the purpose of protecting the electrode from processing gases (column 7, rows 25-33).

7. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided coated electrodes in Yara et al. in order to protect the electrodes from processing gases.

8. With respect to claim 2, said gas supplying means is provided inside said first electrode, and said gas exhausting means is provide inside said second electrode.

9. With respect to claim 3, around said gas supplying means, an inner wall formed of a dielectric is formed (see Figure 3). With respect the gas exhausting means, Yara et al. do not explicitly teach forming a dielectric at this location. However, the disclosure is clear that forming the dielectric permits a normal plasma process method to be performed. One of ordinary skill in the art would recognize that the dielectric could be formed at other locations to further enhance the benefits provided by the dielectric. The courts have ruled that The mere duplication of parts has no patentable significance unless a new and unexpected result is produced. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

10. With respect to claim 4, the coated surfaces of said first and second electrodes, respectively extend on a plane parallel to the surface of the object (the surface facing the object).

11. With respect to claim 5, and electric line of force connecting said first and second electrodes when a voltage is applied between the electrodes extends above and substantially parallel to the surface of the object (in order that the object will be treated).

12. With respect to claim 6, said supply opening and said exhaust opening are provide in a vicinity of a region positioned between said first opposing surface and said second opposing surface (see Figure 3).

13. With respect to claims 7 and 10, although a recessed electrode and the specific inequality regarding the claimed sizing of the electrodes are not taught, it is clearly taught that the processing characteristics can be customized by tailoring the electrode configuration (paragraph 71 of JPO online translation). The courts have ruled that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Art Unit: 1763

14. With respect to claim 8, said supply opening (Figures 3 and 5, 50) and said exhaust opening (Figures 3 and 5, 10) are formed to have a slit shape extending in one direction or formed as a plurality of holes arranged in one direction.

15. With respect to claim 9, said gas supplying means and said gas exhausting means are formed such that total flow rate of gas exhausted through said exhaust opening is not smaller than total flow rate of the processing gas supplied through said supply opening. See Figure 3 and paragraphs 63 and 64 of JPO online translation. Gas supplied, in is subsequently exhausted out, it does not accumulate. The specific flow rates are processing parameters that would be chosen based on the process being executed.

16. With respect to claim 11, a grounded conductive cover (23 and 28) is provided to cover externally exposed surfaces of said first and second electrodes. They are provided for the purpose of serving as the body of the apparatus.

17. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yara et al. and Koinuma et al. as applied to claims 1-11 above, and further in view of Japanese Patent No. 2001103199 A to Nakamura et al.

18. Yara et al. and Koinuma et al disclose the invention substantially as claimed and as described above.

19. However, Yara et al. and Koinuma et al. fail to teach a third electrode positioned next to said second electrode on a side opposite to said first electrode with respect to said second electrode, said apparatus being formed in symmetry with respect to said second electrode.

20. Nakamura et al. teach providing a third electrode in a dielectric discharge apparatus so that a lengthened plasma space is provided and a substrate can be processed while being conveyed through the space (Figure 11, paragraphs 65-69 of JPO online translation).

21. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a third electrode in Yara et al. and Koinuma et al. in order to provide a lengthened plasma space for a conveyed substrate as taught by Nakamura et al.

Art Unit: 1763

Conclusion

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. EP 0617142; USP 5,304,407 and 5,424,103; and USP Pubs. 2003/0104141 A1 2004/0050685 A1 and disclose dielectric barrier discharge plasma processing apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Karla Moore
Patent Examiner
Art Unit 1763
19 March 2006